



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/626,982	07/27/2000	William Jon Schmidt	IBM / 09B	1040

7590 07/24/2003

Wood Herron & Evans LLP
2700 Carew Tower
Cincinnati, OH 45202

EXAMINER

GROSS, KENNETH A

ART UNIT	PAPER NUMBER
----------	--------------

2122

DATE MAILED: 07/24/2003

7

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/626,982

Applicant(s)

SCHMIDT, WILLIAM JON

Examiner

Kenneth A Gross

Art Unit

2122

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on May 5th, 2003 and May 9th, 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 12-19 and 24-35 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 12-19 and 24-35 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

1. This action is in response to the amendment filed on May 5th, 2003, and the supplementary amendment filed on May 9th, 2003.
2. Claims 12-19 remain rejected under 35 U.S.C. 102(b) as being anticipated by “Compilers: Principles, Techniques, and Tools”, Alfred Aho, 1986.

Claim Rejections - 35 USC § 101

3. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 25-31 are rejected under 35 U.S.C. 101 because the claimed invention lacks patentable utility. Specifically, Claim 24 teaches a computer system with compiler and optimizer to perform the method of calculating approximations of sets of entry and exit properties for each basic block of a computer procedure, however the compiler and optimizer of the computer system are not described as residing on any computer hardware medium. Therefore, the computer system recited in Claims 24-31 lacks utility.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Art Unit: 2122

5. Claims 12-19 and 24-32 are rejected under 35 U.S.C. 102(b) as being anticipated by “Compilers: Principles, Techniques, and Tools”, Alfred Aho, 1986.

In regard to Claim 12, Aho teaches a method of computing exit and entry properties of a set comprising: (1) copying into the set of entry properties of a basic block the set of exit properties of a previously selected basic block. In Figure 10.21(b) on page 612, it can be seen that the formula $\text{in}[S2] = \text{out}[S1]$ copies into the set of entry properties of basic block S2, the exit properties of the previous block S1; (2) modifying the set of entry properties of the currently selected basic block in accordance with the property modifications to generate exit properties for the currently selected basic block. Aho teaches in Figure 10.21(a) on page 612 the formula $\text{out}[S] = \text{gen}[S] \cup (\text{in}[S] - \text{kill}[S])$ which computes the exit properties of a basic block ($\text{out}[S]$) by modifying the entry properties of a basic block ($\text{in}[S]$); (3) performing iterations of said iterative dataflow analysis. Aho teaches performing iterations of an iterative dataflow analysis as shown in Figure 10.26. Line (1) shows that the algorithm will be repeated iteratively for each block B. The line “prior to performance of an iterative dataflow analysis” will be given no patentable weight because there is no language in the claim to indicate the ordering of the steps set forth in the claim. Claim 24 corresponds directly with Claim 12 and is rejected for the same reasons as Claim 12.

In regard to Claims 13-19, for specific rejections of Claims 13-19, please see the Office Action mailed on February 3rd, 2003.

In regard to Claims 25-31, Claims 25-31 correspond directly to Claims 13-19 respectively, and are rejected for the same reasons as Claims 13-19, respectively.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 32-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over “Compilers: Principles, Techniques, and Tools”, Alfred Aho, 1986.

In regard to Claim 32, Aho teaches a method of computing exit and entry properties of a set comprising: (1) copying into the set of entry properties of a basic block the set of exit properties of a previously selected basic block. In Figure 10.21(b) on page 612, it can be seen that the formula $in[S2] = out[S1]$ copies into the set of entry properties of basic block S2, the exit properties of the previous block S1; (2) modifying the set of entry properties of the currently selected basic block in accordance with the property modifications to generate exit properties for the currently selected basic block. Aho teaches in Figure 10.21(a) on page 612 the formula $out[S] = gen[S] \cup (in[S] - kill[S])$ which computes the exit properties of a basic block ($out[S]$) by modifying the entry properties of a basic block ($in[S]$); (3) performing iterations of said iterative dataflow analysis. Aho teaches performing iterations of an iterative dataflow analysis as shown in Figure 10.26. Line (1) shows that the algorithm will be repeated iteratively for each block B. The line “prior to performance of an iterative dataflow analysis” will be given no patentable weight because there is no language in the claim to indicate the ordering of the steps set forth in the claim. Aho does not teach a signal bearing media bearing the program. However,

Art Unit: 2122

since the program exists on a program product, the program would obviously be stored in some signal bearing media. Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to perform the method of calculating approximations of sets of entry and exit properties for each basic block of a computer procedure, as taught by Aho, wherein the method is embodied as a computer program being bared on a signal bearing media, since this is allows the program to be saved and transmitted.

In regard to Claim 33, Claim 33 corresponds directly with Claim 13 and is rejected for the same reasons as Claim 13.

In regard to Claim 34, a transmission type media is an well-known type of signal bearing media attached to a computer system that are capable of bearing a program.

In regard to Claim 35, a recordable media is an well-known type of signal bearing media attached to a computer system that are capable of bearing a program.

Response to Arguments

8. In regard to the U.S.C. 102(b) rejection of Claim 12, the applicant states that Aho does not teach an initialization process that overcomes the drawbacks of traditional methods of initializing the sets in[.] and out[.]. Applicant further states that Aho addresses initialization as either initializing an empty set as in Algorithm10.2 on page 625 or initializing with all possible members as in Algorithm 10.3 on page 631. Although the examiner makes no reference to these algorithms in the rejection of Claim 12, the applicant states that the claimed initialization method does not assume an excessively large initial membership to the sets in[.] and out[.]. However, there is no language in Claim 12 and corresponding claims that indicates ordering of the steps set

Art Unit: 2122

forth in Claim 12. There is no way to tell which steps take place “prior to performance of an iterative dataflow analysis” and which take place during the analysis itself. Without proper claim language indicating order, it can be assumed that any steps can be performed at any time. Since the rejection of Claim 12 by Aho teaches all the steps in the claim, the rejection stands.

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kenneth A Gross whose telephone number is (703) 305-0542. The examiner can normally be reached on Mon-Fri 7:30-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tuan Q Dam can be reached on (703) 305-4552. The fax phone numbers for the

Application/Control Number: 09/626,982

Page 7

Art Unit: 2122

organization where this application or proceeding is assigned are (703) 746-7239 for regular communications and (703) 746-7240 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

KAG
July 23, 2003

Horacio C. Gutierrez